



# RETROFITTING HISTORIC WINDOWS

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There is a variety of retrofit techniques providing a thermal efficiency which equals or exceeds that of replacement window units. These methods are generally less expensive than wholesale replacement and insure the greatest amount of historic material is retained in the rehabilitation.

## **ADDITIONAL GLAZING**

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Multiple glazing layers may be achieved as follows:

- A)** The routing of existing sash to accept new (removable) interior or exterior "storm panels" in divided or multi-paned sash; interior panels allow for an undisturbed exterior appearance.
- B)** The installation of permanent additional glazing, usually implemented with heat-activated dessicant compounds which provide the required moisture control between glass layers.

In each of the above, historic sash framing members must be properly sized to support the weight of the added glass.

## **STORM WINDOWS**

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Storm window treatments should be consistent with the character and detail of the historic window opening and overall facade. New units must completely fill the window opening without the use of infill panels. Meeting rails and mullions must align with those of the prime window sash. Glazed areas should match the configuration of the prime sash where possible. Where interior storms are used, sufficient ventilation must be provided at the historic prime sash to avoid moisture condensation that will damage the unit.

Where the above can be met, the following treatments may be acceptable.

- C)** Exterior wood storms.
- D)** Interior or Exterior aluminum storms with a factory-applied baked enamel finish to match prime sash and exterior window trim colors. Bronzed and in "silver"? mill-finish treatments are not appropriate.
- E)** Interior storm units which do not damage historic material.

## **OTHER ENERGY MEASURES**

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The goal of appropriate weatherization measures is to increase the thermal efficiency of the overall building envelope while retaining all

reparable historic material in situ. The following techniques may meet these criteria and should be explored.

- F)** Extra insulation at attic, ceiling, and basement locations.
- G)** Caulking.
- H)** Quality weatherstripping.
- I)** Efficient mechanical systems.
- J)** Insulation of ducting or piping to minimize loss.

## **ADDITIONAL INFORMATION**

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Please specify or provide:

- 1.** Location and description of all window retrofitting techniques.
- 2.** Manufacturers literature for all window retrofitting techniques.
- 3.** Location, material, finish, and configuration for each type of storm.
- 4.** Value estimates for repair and retrofit options versus all others.
- 5.** Life-cycle cost estimates for repair and retrofit options vs all others; estimate pay-back period for each option.

## **PLEASE NOTE**

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Inappropriate window and weatherization techniques may be grounds for project denial for tax credit or state/federal funding purposes. Please telephone the Historic Preservation Office at (609) 292-2023 if you require further assistance.

## **SUGGESTED READING**

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Meyers John H., *"Preservation Briefs: 9, The Repair of Historic Wooden Windows"*. Washington, D.C. Technical Preservation Services, 1981

Park, Sharon C., *"Preservation Briefs: 13, The Repair and Thermal Upgrading on Historic Steel Windows"*. Washington, D.C. Technical Preservation Services, 1981

Smith, Baird M., *"Preservation Briefs: 3, Conserving Energy in Historic Buildings"*. Washington, D.C. Heritage Conservation and Recreation Service, 1978

*"Windows The Old House Journal"* April 1982, entire issue

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